

however, hearing the cries of their captured "sister," came down to the rescue without the slightest show of hesitation, and in a shorter time than it takes to tell were engaged in a spirited attack on the Hawk, apparently using both beak and claws in their effort to make her relinquish her hold.

The result was unexpected, for before I could reach the spot the Shikra had let the Babbler go and had taken refuge in a neighbouring bush, whilst the "seven sisters" not improbably rather elated at the success of their plucky little affray, collected together in a mango tree and poured forth volumes of abuse at the head of their vanquished enemy.

NOTE.—Since writing the above I have many times flown a Shikra at *C. canorus* always with the same result, viz., that so long as I kept out of the way the Babblers would attack the Hawk *en masse* and give her a real 'bad time.' I never let them actually rescue their 'sister,' as it would have been very demoralizing for the Hawk, but I have not the least doubt but that they would have succeeded in making it so warm for the Hawk that she would have been only too glad to let go and be off. More than once she had begun to utter her cries of alarm, preparatory to letting go, when I arrived on the scene and drove off the Babblers. On one occasion I ran up quickly and actually caught a Babbler on the Hawk's back (the Hawk having another Babbler in her claws) holding on so firmly that I had the greatest difficulty in making it leave go! I think therefore I have fairly proved now that Jerdon's attribution of cowardice to this species (*Birds of India*, vol. ii, pt. i, p. 62), is not always correct.

B. B. O.

Notes on various species of Grebes, with especial reference to the power of walking and digestion possessed by these birds.—By F. FINN, B. A., F. Z. S., Deputy Superintendent of the Indian Museum.

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The remarkable birds forming the family *Podicipedidæ* of ornithologists have long possessed for me especial interest, and I venture herewith to record my observations on several of the species, which I have had the good fortune to study in captivity, and thus to observe under conditions which have, I hope, enabled me to set at rest some doubts concerning certain particulars in their economy.

I shall follow wherever possible the nomenclature and arrangement of Mr. H. E. Dresser, who in his *Birds of Europe*, Vol. VIII, has given excellent figures and accounts of most of the species with which I shall here have occasion to deal.

1. *Podiceps cristatus*. The Great Crested Grebe.

In January 1896 I procured from the Calcutta Bazaar a fine specimen of this species, which, however, had its legs broken or dislocated at the hock. In consequence of this, though the feet retained their normal position, it was quite helpless on land, and could only paddle very feebly in the water.

I nevertheless kept it for some days closely confined in a small cage, in the hope that the injured limbs might recover, but although the bird after a day or two fed well upon fish, and seemed strong and lively, its feet got no better, and when I ultimately turned it out on the Museum compound tank it soon disappeared, having probably drifted ashore and been stolen, or fallen a prey to some jackal.

When confined, though as above noted, it took ordinary fish readily (I have seen it eat a dozen as long as large sprats and thicker, and then want more) it did not seem to like prawns, nor would it eat a small siluroid fish which I offered.

On two occasions I saw it deliberately eat one of its own feathers which came out while it was pluming itself, an operation in which, like Grebes generally, it was exceedingly assiduous.

It did not, however, reproduce either feathers or fish-bones in the form of "castings," as suspected by Yarrell (*British Birds*, Vol. IV, p. 121, Fourth Edition); I am certain of this, having had the bird under such close observation. I did, however, notice that its excrement was gritty, as if containing particles of comminuted bone; and I think that anyone who reads the evidence given on this point by Thompson in his "*Birds of Ireland*," Vol. III, pp. 173–189 (reference given by Yarrell *loc. cit.*) will agree with me that there is every reason to believe that this points to the conclusion that no castings are formed, and that feathers and bones are either actually digested or passed out in a comminuted condition.

This bird was of course in winter plumage, but kept its short ruff and ear-tufts expanded when in the cage. It had the bill pink except the upper chap at the tip along the ridge and down to the nostrils where it was dark lead-colour. The iris was brilliant red.

Owing to the crippled condition of the bird I was unable to make any observations as to the power of walking in this species; but this deficiency I was able to supply when at home on leave last October, a young bird having been acquired by the London Zoological Gardens. This specimen, as my own had been, was very savage, drawing blood freely from my hands when I attempted to make it move. Although inclined merely to squat and shove itself along, it could and did walk, but with reluctance, and for a short distance only, standing up on its toes

and waddling along very clumsily. It frequently used its wings to aid it when running, these being full-grown, though the head was still covered with variegated down, already indicating the form of the ornamental plumage on this part.

Some years ago, also in the London Zoological Gardens, I was able to observe the specimen of the large American Grebe, *Podiceps (Aechmophorus) major*, which the Society then possessed. This also seemed able to advance only a few steps at a time, waddling along a little way, and then flopping down on its breast, although it had been some time in the gardens, and was presumably in good health and not cramped or frightened; the latter conditions obtaining to a certain extent in the case of the Great Crested Grebe above alluded to, for this was better on its legs the second time I saw it.

Podiceps nigricollis. The Eared Grebe.

Early in the present year on February 11th, I got a male individual of this species from the Calcutta Bazaar, a sufficiently remarkable locality for it. This bird was weakly, and I found it dead on the third day after I obtained it, though it had fed freely on small prawns and fish. It was gentle and did not peck. Though I had it for at least one night in a cage, I found no "castings;" yet, as in the case of the large species, I twice saw it eat one of its own feathers. It walked freely, several yards at a time, in an erect position, as stated by Dresser, who correctly figures it and other Grebes in this attitude. It had the bill lead-grey, dark on the ridge down to the nostrils, and whitish at the base and on the under surface of the mandible. The iris was reddish orange, with a yellowish-white inner ring, and the feet olive-lead, dark on the under surface of the toes and the outer side of the shank.

The specimen (22115 in Bird Register) has been stuffed in the standing attitude for the Bird gallery in the Museum.

Podiceps fluviatilis. The European Dabchick.

I once observed the gait of this bird on land, in the case of a specimen confined in the aviary in the Fish-House at the London Zoological Gardens. It walked on its toes in the ordinary manner of birds, with an awkwardness which reminded me at the time of a diving duck, only in this case it was even more marked, as might be expected, I have often observed this species in a wild state, and have once seen it half run, half fly, over a narrow strip of grassy ground between two ponds; otherwise I never saw it ashore when wild. But to argue from this that it cannot walk would be like denying the cat the power of swimming because this beast is proverbially averse to water.

Podiceps albipennis (Sharpe). The Indian Dabchick.

I have had many examples of this species of various ages, and have consequently had ample opportunities of observing it. It frequently remains standing up for some time, and walks and runs about quite actively, and can even jump a little, helping itself frequently when running with its wings. Some specimens are less ready and able to walk than others and more inclined to shove themselves along when squatting, but I attribute this to fatigue or to flurry caused by fright. Any bird which is a clumsy walker normally will naturally blunder in its gait when hurried.

In the early part of December 1895, I got from the Bazaar a young specimen of this bird which I kept for some time in a cage, letting it out to swim and feed in any convenient receptacle for water, from an earthen pot to a large masonry tank. It soon became remarkably tame, and before I had had it a week was inclined to follow me about, and seemed restless when confined and unable to get to me. I have let it out in my room and have had it come and squat down by my feet. In fact, when the photograph* exhibited (which I owe to the kindness of Mr. T. H. Holland of the Geological Survey) was taken, I could not get the bird to stand still unless my hand was near. At the same time it exhibited much fear of natives, diving in fright when they approached, when it would let me lift it out of the water in my hand. In addition to intelligence, it showed much courage, on two occasions attacking a dog, and once a Scissor-billed Tern, which easily beat it off: the dog of course had not the chance of retaliating allowed it. Its power of resisting injury was also remarkable; on three occasions (twice within a few minutes) it fell at least a yard on to a stone or concrete floor, and was not hurt, though it did not attempt to save itself with its wings.

The quills on these were not quite grown when I got it, and the head was likewise covered with variegated down. While I had it confined I never saw it bring up "castings," nor has this been the case with any of this species that I have kept; nor did I see any feathers swallowed by them, even in the case of a moulting bird.

I ultimately turned this bird out on the tank of the Museum compound, where after remaining tame for a day or two, it speedily became wild. It was inclined to associate with a Coot, which did not appear to be anxious for its society; but towards the ducks I from time to time put on it exhibited what looked very like animosity, attacking

* This is not clear enough for reproduction,—most unfortunately, as it shows the bird in its normal standing position; *i.e.*, on its toes like an ordinary bird; though I have seen it also in the plantigrade posture.

them at first most vigorously. I fancy, however, that this was merely juvenile mischief, for it became more peaceable as it grew older.

When I placed the Great Crested Grebe above alluded to on one occasion on the tank, its small relative hastily approached, and diving below, could be easily seen through the clear water to come and peck the large bird's toe, rising to the surface out of reach.

It hunted insects and crustaceans when at large, as well as fish, and appreciated a varied diet of these when in captivity. It often came out on to a piece of brickwork, especially at first, to plume itself, and I have even seen it resting there.

I never saw this or any other specimen use its wings when diving; when performing this action it used both feet together, while in swimming it moved by alternate strokes.

This bird had lost nearly all its quills towards the end of January 1896, though they had only recently been fully developed. By this time also the head appeared to be feathered. On the 2nd February the quills were nearly grown again, as I find from my notes then taken.

In the following month (March) I procured an adult, and turned this also out on the tank, and the two soon became friendly. I observed before turning out the new bird that, although hungry, and searching for food with its head under (a common action) in the water in which I placed it, it nevertheless refused to eat a sharp-toothed Goby; it took, however, a spider and some mole-crickets. At the end of March I noticed that this specimen also had moulted all its quills, so that this must be the usual mode of moulting in this species of Grebe at all events.*

Soon after this I went to the Andamans, and on my return could not distinguish with certainty my old pet from the new dabchick. I did see, indeed, one of them make a Whistling Teal fly out of the water; and if this were the young bird at its accustomed mischief, it had by this time advanced nearly into full breeding plumage, which was not the case with the other bird; but this is, I should think, unlikely.

After this one of these dabchicks disappeared. I often saw one fly short distances in the evening, and noticed that it alighted "anyhow," letting the feet trail behind all the time, and not putting them out in front like a duck or gull.

* I have observed a similar complete moult of the quills in the Common Coot (*Fulica atra*) the Waterhen (*Gallinula chloropus*) and in a species of *Porphyrio*. In the case of the Coot the observation has been previously made by St. John (Natural History and Sport in Morayshire), but I noticed it independently on the tank here. The Moorhen I noticed in St. James' Park in 1897, and the *Porphyrio* in the Calcutta Zoological Gardens.

One of the birds, I think the same, remained on the tank for at least a year after this, but ultimately disappeared. As before indicated, I have had other specimens, and noted in these also the power of walking denied to the Grebes by some observers. On two occasions I experimented with some in order to find if they could rise off the ground and get on the wing. The results of the experiments have left me somewhat in doubt on this point. In the first case a bird let loose on a lawn was able to raise itself a foot or so from the ground, and I note that it "could evidently have flown off if in good form." This was early in the present year, and the other day I repeated the experiment with another bird, which could hardly clear the ground, but it was, I think, in a weak state at the time, for it could not walk far at a time, and when turned out on the tank came out of the water, a thing I have seldom seen a healthy Dabchick do. In fact, I believe these birds sleep in the water from what I have seen.

The iris in this species is brownish yellow, but I noticed that in my young bird it was hazel at first, and in a still younger one, downy all over, and with no feathers on the wings, it was brown.

The beak is buff, black along the ridge, and green at angle of mouth.
